

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Cancel claims 1-41 and 77-92.

42. (Currently Amended) A process for producing at least one continuous grating structure formed as a line grating with distances of between 100 nm and 2500 nm between consecutive grating lines on a surface portion of a substrate, by covering the surface portion with a photoresist layer,

bringing the surface portion into proximity of a phase mask having a grating structure, with the photoresist layer facing said mask,

exposing the phase mask at an angle which departs from the Littrow angle (θ_L) or from 0° by no more than 10° ,

developing the photoresist layer and subjecting the surface portion to an etch process to produce the grating structure,

removing the photoresist layer,

wherein the phase mask has a transparent region with a diffraction grating and with portions of the diffraction grating masked ~~is structured in advance by photolithography with the two beam interference method or is derived from a master copy structured in this manner.~~

43. (Previously Presented) The process according to Claim 42,

wherein the extension of the at least one grating structure is at least 0.5 cm.

44. (Original) The process according to Claim 42,

wherein the surface area of the at least one grating structure on the phase mask is at least 10 cm^2 .

45. (Original) The process according to Claim 42,

wherein the exposure of the photoresist layer is to a mercury-vapour lamp.

46. (Original) The process according to Claim 42,

wherein the exposure of the photoresist layer is to an excimer laser or argon laser.

47. (Previously Presented) The process according to Claim 42, wherein the phase mask comprises a transparent substrate and a layer interrupted in a structured way optically inactivating the grating structure.

48. (Previously Presented) The process according to Claim 47, wherein the interrupted layer consists of a nontransparent material.

49. (Original) The process according to Claim 48, wherein the substrate is a quartz substrate.

50. (Original) The process according to Claim 42, wherein the side of the phase mask facing the photoresist layer is covered by an antireflection layer.

51. (Original) The process according to Claim 42, wherein during the exposure of the photoresist layer, the photoresist layer is in vacuum contact with the phase mask.

52. (Original) The process according to Claim 42, wherein the thickness of the photoresist layer is at most 200 nm.

53. (Original) The process according to Claim 42, wherein the photoresist layer prior to exposure is covered by a reflection-reducing layer.

54. (Currently Amended) The process according to Claim 42, wherein during the exposure of the photoresist layer, the distance between this layer and the phase mask is between 2 nm microns and 100 nm microns.

55. (Previously Presented) The process according to Claim 42, wherein the etch process is reactive ion etching.

56. (Original) The process according to Claim 42,
wherein the material of the substrate essentially is quartz, silicon, thermally
oxidised silicon, germanium, silicon-germanium, a III-V compound semiconductor, or
lithium niobate.

57. (Original) The process according to Claim 42,
wherein at least one transparent layer having a refractive index different
from that of the substrate is applied to the surface portion after applying the grating
structure.

58. (Previously Presented) The process according to Claim 57,
wherein the grating structure and the transparent layer are formed in such a
way that the coupling angle (θ) changes by at most 0.1°/cm along the line and the
absolute value of deviation of the coupling angle(θ) from a target value does not
exceed 0.5°.

59. (Original) The process according to Claim 57,
wherein the transparent layer is applied by reactive DC magnetron
sputtering, in particular pulsed DC sputtering or AC-superimposed DC sputtering.

60. (Original) The process according to Claim 57,
wherein the thickness of the transparent layer is between 50 nm and 5000
nm.

61. (Previously Presented) The process according to Claim 57,
wherein the material of the transparent layer is Ta₂O₅, Nb₂O₅, TiO₂, ZrO₂,
Al₂O₃, SiO₂-TiO₂, HfO₂, Y₂O₃, SiO_xN_y, Si₃N₄, HfO_xN_y, AlO_xN_y, TiO_xN_y, MgF₂ or CaF₂.

62. (Original) Optical element, produced by the process according to
Claim 42.

63.-76. (Canceled).

93. (Previously Presented) The process according to Claim 42, wherein
said angle departs by no more than 5°.

94. (Previously Presented) The process according to Claim 43, wherein the at least one grating structure is at least 1 cm parallel to the line.

95. (Previously Presented) The process according to Claim 48, wherein the nontransparent material is metal.

96. (Previously Presented) The process according to Claim 95, wherein the metal is chromium.

97. (Currently Amended) The process according to Claim 55, wherein the reactive ion etching is with a gas containing at least one of Ar, ~~CHClF₂~~ CHClF₂, CHF₃.